

In the Claims

Applicant has submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please amend pending claims 1, 3, 5, 14, 16-18, 23, 26 and 29 as noted below.

Please add new claims 36-40 as noted below.

Listing of the Claims

1. (Currently amended) A device that receives and processes signals from a telephone line and supports a plurality of telephone signal protocols, comprising:

a converter circuit that digitizes input signals received on the telephone line, the converter circuit providing a digital signal having components associated with the plurality of telephone signal protocols; and

[[a fixed-rate clock that provides to the converter circuit a substantially fixed-rate clock signal; and]]

a digital filter circuit, coupled to the converter circuit to receive the digital signal, the digital filter circuit adapted to convert a sample rate of the digital signal, wherein the digital filter converts the sample rate of the digital signal by an amount that varies to provide a first output signal having a variable sample rate, the first output signal associated with a first of the plurality of telephone signal protocols [[that filters the digitized input signals to separate signals associated with different protocols, wherein the digital filter circuit is associated with at least one variable sampling rate]].

2. (Canceled) .

3. (Currently amended) The telephony device of claim 1 wherein the digital filter circuit comprises a first variable-ratio decimation filter.

4. (Canceled)

5. (Currently amended) The telephony device of claim 3 wherein the first variable-ratio decimation filter [[filters one of the separate signals]] provides the first output signal, which is associated with a DSL protocol, and wherein the digital filter circuit further comprises a second variable-ratio decimation filter that [[filters a different one of the separate signals]] provides a second output signal, which is associated with a POTS protocol.

6-13. (Canceled)

14. (Currently amended) A device that processes signals [[received on]] to be provided over a communication link [[for supporting]] in support of a plurality of signal protocols, the device comprising:

a first sample-rate converter that converts a sample rate of a first digital signal associated with a first protocol of the plurality of signal protocols;

a second sample-rate converter that converts a sample rate of a second digital signal associated with a second protocol of the plurality of signal protocols; and

a digital to analog converter configured to receive a combined digital signal formed from the first digital signal and the second digital signal and to convert the combined digital signal to [[, coupled to the communication link, that outputs]] a single analog signal associated with both the first protocol and the second [[protocols]] protocol [[in response to the two sample-rate converted digital signals]].

15. (Canceled)

16. (Currently amended) The device of claim 14 wherein the first [[sampling]] sample-rate [[filter]] converter comprises an interpolation filter.

17. (Currently amended) The device of claim 16 wherein the interpolation filter has a variable sampling rate, such that the first digital signal is provided with a sampling rate that varies during operation of the device.

18. (Currently amended) A device that receives and processes signals from a communication link and supports a plurality of signal protocols, comprising:

an analog to digital (A/D) converter, coupled to the communication link, that receives an analog input signal indicative of a signal on the communication link and outputs a digital signal sampled data stream representative of the analog input signal, the digital signal having components associated with the plurality of signal protocols; and

a digital filter, coupled to the A/D converter, the digital filter comprising:

a first decimation filter [[and a second decimation filter,]] that receives the digital signal and converts a sample rate of the digital signal to provide a first sample-rate converted digital signal having a first sample rate, the first sample-rate converted digital signal associated with a first of the plurality of protocols; and [[outputs at least two separate digital signals each having an association with a respective one of at least two of the plurality of signal protocols, wherein the first decimation filter provides a first signal of the at least two separate digital signals, and the second decimation filter provides a second signal of the at least two separate digital signals]]

a second decimation filter that receives the digital signal and converts the sample rate of the digital signal to provide a second sample-rate converted digital signal having a second sample rate, the second sample-rate converted digital signal associated with a second of the plurality of protocols.

19-22. (Canceled)

23. (Currently amended) The device of claim 18 wherein the first sample-rate converted digital signal is associated with a POTS signal protocol, and the second sample-rate converted

digital signal is associated with a protocol selected from a group consisting of ADSL and IDSN, and a different type than POTS.

24-25 (Canceled).

26. (Currently amended) The device of claim 18, wherein the plurality of signal protocols includes a [[wherein the]] first [[one of the at least two of the plurality of]] signal [[protocols]] protocol that occupies a first bandwidth and [[the]] a second [[one of the at least two of the plurality of]] signal [[protocols]] protocol that occupies a second bandwidth that does not overlap the first bandwidth.

27-28 (Canceled).

29. (Currently amended) The device of claim 18 wherein the digital filter further comprises at least two interpolation digital filters, each of the at least two interpolation digital filters having an association with a respective one of the first signal protocol and the second signal protocol [[at least two of the plurality of signal protocols]].

30-35. (Canceled)

36. (new) The device of claim 1, wherein the converter circuit provides the digital signal having components associated with two telephone signal protocols, and wherein the digital circuit comprises:

a first sample rate converter coupled directly to the digital converter circuit to receive the digital signal, the first sample rate converter configured to convert the sample rate of the digital signal in support of a first of the two telephone signal protocols to provide a first converted digital signal; and

a second sample rate converter coupled directly to the digital converter circuit to receive the digital signal, the second sample rate converter configured to convert the sample rate of the

digital signal in support of a second of the two telephone signal protocols to provide a second converted digital signal.

37. (new) The device of claim 36, wherein the second sample rate converter is configured to convert the sample rate of the digital signal by an amount that varies according to operation characteristics of the device.

38. (New) The device of claim 18, wherein the first decimation filter reduces the sample rate of the digital signal by an amount that varies during the operation of the device.

39. (New) The device of claim 38, wherein the first decimation filter has a variable reduction factor that varies in response to at least one control signal responsive to at least one operating characteristic of the device.

40. (New) The device of claim 39, wherein the control signal is part of a phase lock loop that includes the first decimation filter.